

May 29, 2006

MEMORANDUM

TO: David Anderson, Engineering Manager
Twin Falls Regional Office

FROM: Olga Cuzmanov, Associate Engineer
Twin Falls Regional Office

SUBJECT: Request for modification of The Amalgamated Sugar Company (TASCO)
Wastewater-Land Application Permit Application Review (Paul, ID) --
LA-000050-03 (Sugar Beet Processing Wastewater)

Project Description

The TASCO Paul sugar beet processing facility is located about 1.2 miles northeast of Paul, Idaho. A total of 225 million gallons of wastewater (process water and condensate water) are currently permitted to be land applied on 518 owned acres (Onsite acreage) and 395 leased acres (Offsite acreage). The facility reports that over the past five years an average of 97 MGA of wastewater was land applied (approximately 14% of process water and 86% condensate).

Summary of Events

The facility received a Wastewater Land Application Permit (WLAP) on June 13, 1989 and was re-permitted on July 5, 1996. The current permit was modified on November 27, 1996 incorporating additional condensate treatment acreage and allowing land treatment of wastewater on acreage loaded at *de minimis* rates. The current permit was further modified on April 14, 1997 to reflect a change of ownership. In a letter dated October 23, 1998, TASCO notified DEQ of its intent to utilize the South Schow acreage at *de minimis* rates according to Schedule A no.7 of the current permit (see Appendix 'B').

TASCO submitted an application for re-permitting the site on April 3, 2000. Additional application materials were received on May 3, 2000. DEQ issued three draft modifications in response to the Application. These draft modifications and associated staff analyses concerned the permitting of the Schow Expansion Acreage (DEQ, June 26, 2001), remediation of ground water at the Pond and Facility Complex (DEQ, June 25, 2001), and resolution of Well Location Acceptability Analysis issues (DEQ, June 27, 2001). A draft wastewater land application permit was issued on April 18, 2003 for public comment. Comments to the draft permit were received from TASCO on August 31, 2003. Currently, the Department is in process of preparing another draft permit incorporating those comments.

At the beginning of December 2002, TASCO purchased Gillette farm (MU-005005) and one year later in December 2003 purchased Goitiandia farm (MU-005004). Both sites were permitted in 1992 as Off-site acreage, for the irrigation of condensate water during the non-growing season. Currently, TASCO owns 518 acres and has the option to irrigate an additional 395 offsite acres permitted for non-growing season operation, for a total of 913 permitted acres, as described above.

The facility is currently in process of modifying the process in order to increase the beet slicing capacity. The increase in slice capacity will result in an increase in the amount of condensate produced. TASCO proposed to install an eighty (80) million gallons lined storage pond and land apply the condensate water during both growing and non-growing season to the on-site acreage. The sites to be irrigated include the farms purchased from the off-site acreage owners: Goitiandia (MU-005004) and Gillette (MU-005005). Currently the condensate is irrigated for the most part during the non-growing season only. TASCO anticipates that there will be no increase in the amount of process water due to the beet slice increase. TASCO is requesting a permit modification to allow growing season irrigation of both condensate and process water to Gillette and Goitiandia sites. A Permit Modification Request was submitted on March 3, 2006 and additional information was received on May 12, 2006 in response to DEQ's comments of April 10, 2006.

Following table shows the current and proposed loadings by TASCO for Goitiandia and Gillette farms in the Permit Renewal Application (2000) and Permit Modification (2006):

Goitiandia (MU-005004) and Gillette (MU-005005) farms			
	Current Permitted Loadings	2000 Permit Renewal Proposed Loadings for off-site farms including Goitiandia and Gillette	2006 Permit Modification Proposed Loadings
Wastewater Loading (Total) (ac-in/ac-yr)	9.5	Crop Consumptive use divided by Irrigation Efficiency	Crop Consumptive use divided by Irrigation Efficiency
Wastewater Loading (NGS) (ac-in/ac-yr)	9.5	9.5	9.5
NVDS (lb/ac-yr)	642 GS 642 NGS	642 Total ²	4000 Total ¹ 642 NGS
Wastewater COD (lb/ac-yr)	50 GS 25 NGS	50 Yearly average 25 NGS	50 GS 25 NGS
Wastewater Nitrogen (lb/ac-yr)	150% of crop uptake or 300 lbs/ac-year	150% of crop uptake minus fertilizer and increase in soil nitrogen*	150% of crop uptake or 300 lbs/ac-year
Wastewater Nitrogen (NGS) (lb/ac-yr)	NA	150**	NA
Phosphorous (lb/ac-yr)	150% of crop uptake	150% of crop uptake	NA

Notes: 1 Includes supplemental irrigation NVDS loading

2 At the time Permit Renewal Application was submitted the management units were part of the Offsite Acreage and the irrigation typically takes place during NGS at those farms

* Items with bold text were proposed changes to be implemented within 3 years of the permit approval (See Table 6-1 Proposed Loading Rates of the Permit Renewal Application, May 3, 2000)

** NH₄ added to soil as determined by Ammonia Volatilization study (See Table 6-1 Proposed Loading Rates of the Permit Renewal Application, May 3, 2000)

The sections below discuss proposed constituent loading rates, including nitrogen, non-volatile dissolved solids, chemical oxygen demand (COD), phosphorus and hydraulic loading limits. The recommended limits for inclusion into the draft permit modification are also discussed.

Nitrogen Loading Rates

The annual nitrogen loading rate proposed in the 2000 Permit Renewal Application for Goitiandia (MU-005004) and Gillette (MU-005005) sites is 150% of crop uptake minus fertilizer and soil increase in soil nitrogen. Also, a loading of 150 lb/ac-year is proposed for the Non-Growing Season. The 2006 Permit Modification proposed annual loading is 150% of crop uptake. The Department recommends that the nitrogen loading for the permit modification is a yearly 150% of crop uptake and 150 lb/ac for the NGS as proposed by TASCO.

The evaluation of the current ground water network for the entire site including Goitiandia and Gillette farms as well as the evaluation of the NGS loading rate will be addressed in the permit renewal process.

Non-Volatile Dissolved Solids Loading Rates

The Permit Renewal Application proposes the non-volatile dissolved solid (NVDS) loading rate of 642 lb/ac for Goitiandia (MU-005004) and Gillette (MU-005005) sites. At the time when the Application was submitted (year 2000) the management units were typically irrigated only with condensate water during the NGS. In the Permit Modification the proposed loadings are:

- 4000 lb/ac-year for GS and NGS (includes wastewater and supplemental irrigation water)
- 642 lb/ac during NGS (for wastewater irrigation only).

It appears that the proposed NVDS loadings are at levels well below regulatory concern. Consequently, the recommended NVDS loadings are same as those proposed.

The evaluation of the current ground water network for the entire site including Goitiandia and Gillette farms as well as the evaluation of the NVDS loading rate will be addressed in the permit renewal process.

Hydraulic Loading Rates

The permittee proposes in the Permit Renewal Application (2000) and the Permit Modification (2006) that the growing season (GS) hydraulic limit loading should be crop consumptive use divided by irrigation efficiency. The Department recommends for the Permit Modification that the limit would be the irrigation water requirement (IWR) since the crop consumptive use does not take into consideration effective precipitation (PPTe).

The proposed wastewater non-growing season (NGS) hydraulic loading limit of 9.5 inches does not appear to be based on specific soil characteristics for each of the management units. On page 37 of the Permit Renewal Application (2000) is stated that *“Site-specific loading rate estimates should be based on unique soil and crop characteristics and management criteria.”* Consequently it is recommended that the calculations be performed for each management unit (MU-005004, Goitiandia and MU-005005, Gillette) and used to determine site specific NGS hydraulic loading limits prior to NGS irrigation of the wastewater.

COD Loading Rates

Guideline growing season COD loading rates of 50 lb/acre-day and non-growing rates of 25 lb/acre-day are proposed in both the Permit Renewal Application (2000) and Permit Modification (2006). It is recommended that proposed loading rates be incorporated into the draft permit modification.

Phosphorus Loading Rates

Currently the maximum phosphorus loading rate is 150% of crop uptake and is same as the loading rate proposed in the Permit Renewal Application (2000). The Permit Modification request (2006) does not specify any loading limit. Phosphorus loading does not represent an environmental concern due to very low wastewater loading. However, until the issuance of the new permit is recommended that the phosphorus loading continue to be monitored and the current loading rate be maintained: 150% of crop uptake.

Ground Water

As discussed in Section 4.5.14 Ground Water Impacts-Offsite Acreage of the staff analysis accompanying the draft permit dated April 7, 2003:

“Ground water quality of the Offsite acreage is discussed in the Application (page 54), and trend plots appear in Figure 4-8. Offsite acreage has only a minimal monitoring well coverage...”

“The present monitoring well network that is serving the Offsite acreage does not appear to be adequately measuring ground water responses from land treatment activities. As stated in the Application (page 68), it is *“difficult to determine the relationship between loading rates, soils, and groundwater concentrations (of Offsite Acreage) using these wells (i.e. Wells A, 107 and 112).”* It is recommended that the current network be evaluated, and modified as needed so that it can effectively monitor the environmental performance of the Offsite Acreage.”

Conclusions and Recommendations

It is recommended that the hydraulic management units be managed and loaded hydraulically during the NGS based on the calculated soil available water capacity (AWC) for each farm, as discussed above.

The maximum COD loading rates should be set as proposed: 50 lb/acre-day GS and 25 lb/acre-day NGS.

The maximum N loading rates should be set as proposed in the permit renewal application and permit modification: yearly value of 150% of crop uptake and not to exceed 150 lb/ac during NGS.

The maximum NVDS loading rates should be set as proposed in the permit modification request: yearly total 4000 lb/ac (wastewater and supplemental irrigation water) and 642 lb/ac during the NGS.

As discussed in Section 5.2 Ground Water Related Recommendations of the staff analysis accompanying the draft permit dated April 7, 2003 it appears that Goitiandia (MU-0050004) and Gillette (MU-0050005) environmental performance may not be adequate: “Of particular concern is Offsite Acreage environmental monitoring. It is recommended that the current Offsite monitoring well network be evaluated, and modified as needed so that it can effectively monitor the environmental performance of the Offsite acreage”.

The purchase of the Goitiandia and Gillette farms gives TASCOS full operational control of the sites. This will allow for an adequate management of the farms by reducing the overall load to the groundwater.

David Anderson DRAFT

May 15, 2006

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DEQ staff recommends that the permit modification request be issued. The draft permit modification contains loading limits for nitrogen, non-volatile dissolved solids, chemical oxygen demand, growing and non-growing season hydraulic loading rates protective of the groundwater.

cc: Richard Huddleston, Mark Mason, SO
WLAP Source File no. LA-000050-03 (SO & TFRO)